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Rail Road News.

Important Railroad Law Decision.

At the recent term of the United States Circuit Court, held at Rutland, Vermont, Justice Nelson presiding, the Troy and Rutland Railway Company, or the Rutland and Washington, as it is designated in Vermont, applied for an injunction against the Whitehall and Rutland Company. A bill has been filed by the Rutland and Washington Company, for a perpetual injunction to restrain the building of the Rutland and Whitehall Railroad, on the ground mainly, that the charter of the latter company was the grant of the same or a similar franchise with the former, and therefore, under the constitution of the United States, invalid as impairing the obligation of a contract. It appears, however, from the argument, that the routes of the two roads were not in fact parallel throughout, and that $100,000 had been already expended on the Rutland and Whitehall Railroad, which under the contract, was to be completed within a year. In the defence it was contended in the first place that there was a fatal defect of parties, in omitting to make the principle (the Rutland and Whitehall Company) a party to the suit; and in the next, that, if made a party, the Court had no jurisdiction, both parties being corporations created by and doing business in the same State; and lastly, it was insisted upon the merits that the constitutional provision did not apply.

English Railways.

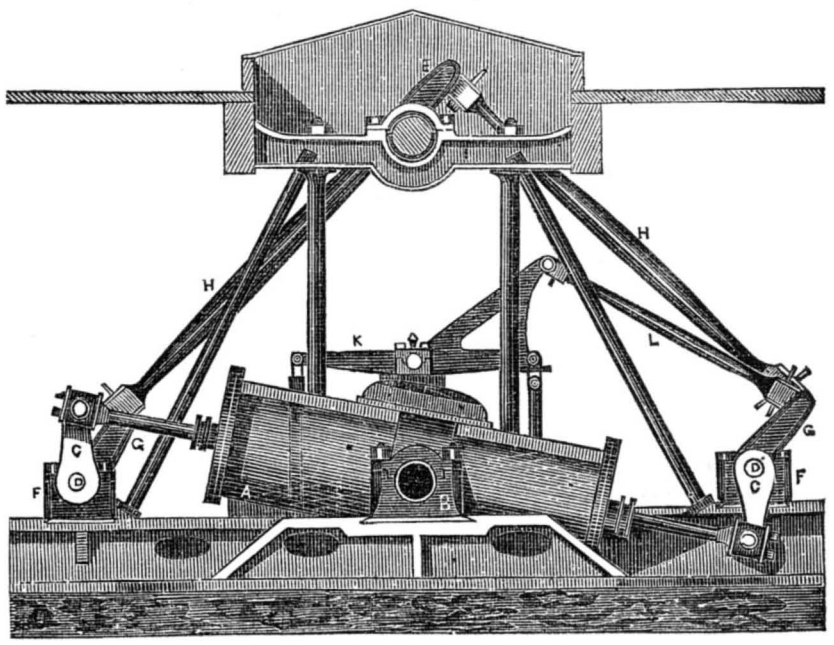
From an analysis of railroads in Great Britain and Ireland, it appears that the number of miles of railroad open for use, on the 30th of June last, was 5,447. The number of passengers conveyed during the preceding half year was 28,761,895. The number of persons killed on the railroads during that period was 86, and of persons injured 75. Of the persons killed, 12 were passengers, five of whom were killed from causes beyond their own control, and seven in consequence of their own misconduct or want of caution. Of the other persons killed, 51 were persons in the employ of the railway companies or of contractors, and 21 were trespassers or persons in no way connected with the railroads, who lost their lives in consequence of improperly crossing or standing on the tracks.

Queen Victoria and the royal family, on her return from her late visit in the highlands of Scotland, for the first time made her return journey the whole way by railroad, it was proposed to make the journey from the seat of Earl Gray, in Northumberland, near the Scottish border, in the Isle of Wight, a distance of 450 miles, in two days.

Railroads in Pennsylvania.

There is a movement in Pennsylvania for a new Line West which is looked upon with great interest by those who have a mercantile eye to the benefit of linking Philadelphia with Pittsburg, the great line through Ohio and with St. Louis, in hopes of the future Pacific Railroad running from there to San Francisco.

IMPROVEMENTS IN MARINE STEAM ENGINES.



This is a side elevation of improvements in Marine Steam Engines, invented and patented in England, by Messrs. John Hick & Wm. Hodges, of Lancaster Co., England, and a description of which first appeared in the London Patent Journal. As this is a subject to which a great deal of attention is directed at present, we believe it will be of no little interest to many of our readers.

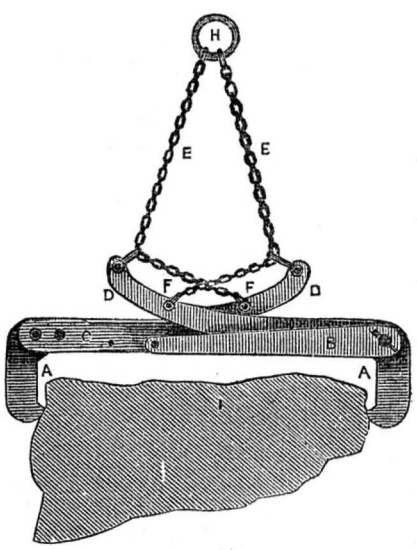
This machinery is principally adapted for war vessels, where the main shaft is desired to be low in the hold, and the machinery placed below the water line; but regarding it as a whole we consider it as more novel than beneficial.

It will be seen that the cylinder A, is placed horizontally, and oscillates on bearings, B. It is furnished with two pistons, with a separate piston-rod passing from each end of the cylinder, and connected with cranks C,C, on the crank-shafts, D,D, to which they impart simultaneous motion. One cylinder only is shown in this view, there being another similarly situated on the other side of the main-crank, E, and connected to cranks, C,C, placed at right angles on the shafts, D,D, to those before mentioned. Between the bearings, F, are double arm cranks, G, to which the connecting-rods, H, H, are attached; and these being placed at right angles to each other, are both connected to the same pin of the main-crank, E, on the paddle shaft; the one having a double or forked end, embracing the single end of the other. A frame, I, is placed on either side of the main-crank, which constitutes the whole support of the shaft, with the exception of the paddle-box bearings.

The air-pumps are worked from each end of the oscillating lever, K, which is connected with one of the cranks, G, by means of the rod L. The valves and other gearing may be worked by any of the arrangements usually resorted to in oscillating engines.

When these engines are intended for working a propeller-shaft, the connecting-rods, H,H, are dispensed with, and the piston-rods of one cylinder are placed in connection with double arm cranks, G,G;—the framing, of course, being suitably constructed for such arrangement; the two overhung cranks G,G, are connected by means of a straight bar placed transversely across the vessel, the engines being in a position suitable for such purpose. A single crank is placed on the end of the propeller-shaft, the crank-pin of which is of a like radius with the cranks, G,G, and is connected with the connecting-bar at the centre, and receives a corresponding motion, thereby communicating it direct to the propeller shaft.

The Webber.



This is an apparatus which derives its name from the inventor, Mr. E. Webber, of Gardner, Maine. It has been patented, and is now the property of the Assignee, Mr. Daniel Winslow, of Portland, Me., a gentleman who will pay prompt attention to any letters (*p. p.*) that may be addressed to him on the subject. Its object is to grasp and retain masses of ice, or blocks of stone of various sizes. A A are the jaws which are moveable, and can be increased or diminished in distance to grasp and retain large or small blocks, I. D D are the levers of the jaws, to which are attached the chains, E E, at two places by rings, F F, and to a central ring, H, above; B C are shifting braces, for the purpose of changing the fulcrum of the levers at pleasure. The object of this apparatus, and the difference between it and those in common use, will be apparent to all. For the purpose of elevating masses of ice and blocks of stone, boxes, bales, &c., of various sizes, its utility and advantages are apparent, and must be set down among those improvements that are *new* and *useful*.

West India Coffee.

All the coffee grown in the West Indies has sprung from two plants taken thither in 1726, by a French botanist from the botanic garden at Paris. On the voyage, the supply of fresh water became nearly exhausted, but so anxious was the Frenchman to preserve the plant, that he deprived himself of his allowance in order to water them.

Useful Receipts.

To make Aromatic Rhubarb Syrup.

Take of rhubarb. bruised, 2½ oz.; cloves, bruised, cinnamon, bruised, each ½ oz.; nutmeg, bruised, 2 drachms; diluted alcohol, 2 pints; syrup 6 pints. Macerate the rhubarb and aromatics in the diluted alcohol for fourteen days, and strain; then, by means of a water-bath evaporate the liquor to a pint, and, while it is still hot, mix it with white sugar to a proper taste. Aromatic syrup of rhubarb may also be prepared by putting the rhubarb and aromatics, previously reduced to coarse powder, and moistened with diluted alcohol, into an apparatus for displacement, pouring upon them gradually diluted alcohol until two pints of filtered liquor are obtained, then evaporating to a pint, and completing the process as above directed.

Common Rhubarb Syrup.

Take of rhubarb, bruised, 2 oz.; boiling water a pint; sugar 2 lbs. Macerate the rhubarb in the water for 24 hours, and strain; then add the sugar.

To make Smelling Salts.

Take a small piece of burnt unslaked lime, say 1½ oz., and add to it in a mortar, 1 oz. of muriate of ammonia, rub them well together, and you will perceive the pungent smell of ammoniacal gas. Observation—The muriatic acid—spirit of salt—of the sal-ammoniac has a greater affinity for lime than ammonia, it therefore leaves the ammonia and combines with the lime, forming the muriate of lime, whilst the ammoniacal gas is set at liberty.

Volatile Salt Scent Bottles.

Fill small wide mouthed phials with the smelling salts, and add a drop or two of essence of lemon to each, thus superior scent bottles will be formed; the ingredients of a hundred of them would not cost two shillings, and at the same superior to the most that are made.

To make Water of Ammonia, Hartshorn.

Into a retort put some quicklime, broken small, along with muriate of ammonia, let the beak of the retort be immersed in water, and apply a lamp below the retort; the ammonia-gas will be given out, and passing into the receiver nearly full of water, it will be absorbed by the water, forming water of ammonia.

To Make Solder for Steel-joints.

Silver 19 pennyweights, copper 1 pwt. and brass 2 pwt. Melt under a coat of charcoal-dust.

Kustitlen's Metal for Tinning.

Malleable Iron, 1 lb., heat to whiteness; add regulus of antimony, 5 oz., and Molucca tin 24 lbs.

Blanched Copper.

Fuse 8 oz. of copper and ½ oz. of neutral arsenical salt, with a flux made of calcined borax, charcoal-dust and powdered glass.

Warts.

Irritating substances should never be applied to warts. I have found them effectually removed by a strong decoction of galls, which hardens their surface, and constricts the laxed skin round the bottom of the warts, and a few days, or perhaps a week will show the result. On this principle school boys apply ink.—[Ex.

[We have removed many warts by a very simple and easy process, viz., to wash them with a strong solution of pearlash, and let it dry on the warts. If this is done two or three times, the warts will disappear.

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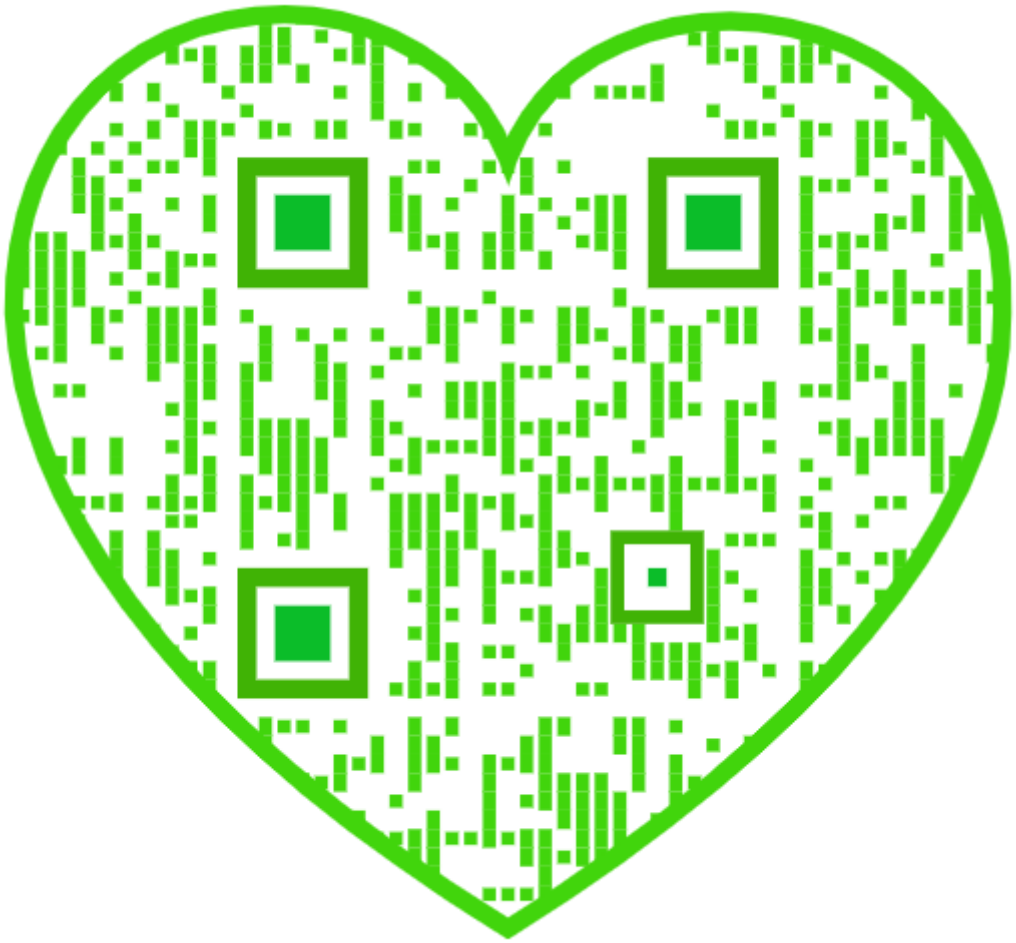

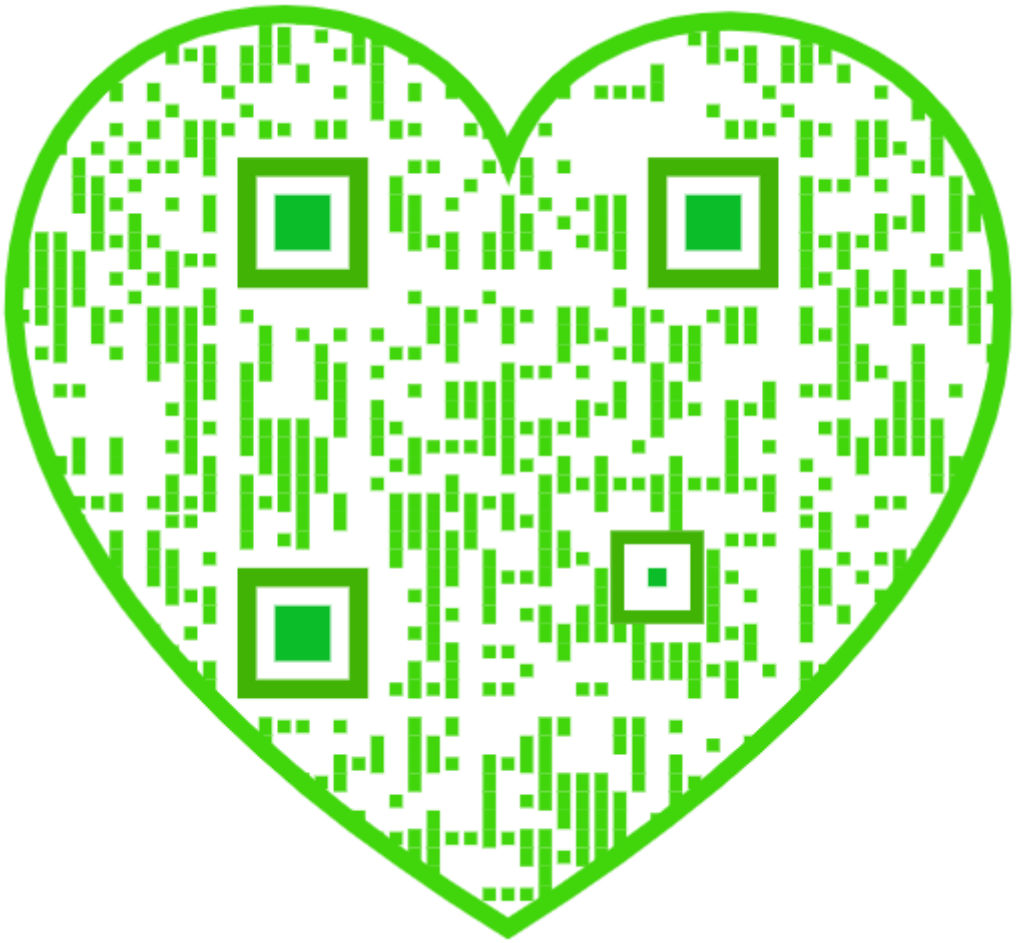

Miscellaneous.

Interesting Trial of Rope.

A test trial, says the Cincinnati Commercial, of Manilla and Kyanized American rope, was had on Saturday last, at Griffey's Foundry, which resulted most favorably to the American manufacture. The parties met at about three o'clock, P. M., and immediately proceeded to the trial. A small Manilla rope, of the best quality of Boston make, was first tried, and was broken, after sustaining a weight of 1520 pounds. The Kyanised rope, invented and manufactured by J. T. Crook & Co., of Maysville, was then put to the same test, and sustained a weight of 2320 pounds before parting. A second trial was then had of the same size of Manilla rope, which sustained a weight of 2200 pounds. A second trial was then also had of the Kyanized rope, and sustained a pressure of 2410 pounds. Two trials were then had with a larger size of the Manilla rope, manufactured by Bonte, which parted first at 2840 pounds, and on the second trial at 2796 pounds. One trial was then made with the Kyanised rope, which sustained the weight of 3220 pounds before parting. The average difference in favour of the Kyanized unrotted hemp rope being in the first trials 500 pounds, and in the last trial 400 pounds. This shows that the Manilla rope, which has always been considered the best that was ever used, is far inferior to the American unrotted hemp rope. The Kyanized rope is manufactured from the unrotted hemp, and is not only the strongest rope made, but by the chemical process of Kyanizing, is by far the most durable.

Yankee Wonders.

The Mexicans on the frontier said, when the American army was in Mexico, that it never rained so much in their country before, and they attributed it to the coming of the Yankees. The same is also said to have been the case in California; and Col. Doniphan's expedition, when perishing with thirst in a sandy desert in the midst of a dry season, was refreshed by a heavy shower of rain, said by the oldest natives never to have occurred before at that season. Now, according to the last accounts from California, a still greater wonder has happened. A letter from the government surveying party, at San Diego, says a river 20 yards wide and 10 feet deep has burst forth in the middle of the great desert, which is 90 miles wide, between the San Diego and the mouth of the Gila. The Indians are described as frightened by its appearance and lay it all to the Yankees.

How Many Miles a Printer's Hand Travels.

Although a printer may be setting all day, yet in his own way he is a great traveller, or at least his hand is, as we shall prove. A good printer will set 8,000 ems a day, or about 24,000 letters. The distance travelled over by his hand will average about one foot per letter, going to the boxes in which they are contained, and of course returning, making two feet every letter he sets. This would make a distance each day of 48,000 feet, or a little more than 9 miles; and in the course of a year, leaving out the Sundays, that member travels about 3,000 miles!

Bleeding at the Nose.

Dr. Samuel R. Smith of Tomkinsville, Staten Island, New York, communicated to the Boston Medical Journal a method of stopping bleedings at the nose, which he learned of an old shipmaster. His process was to roll up a piece of paper and place it under the upper lip. Dr. Smith stopped bleeding which had continued four days, by tying a knot in a bandage and applying it on the upper lip, and tying the bandage round the head. The *rationale* of this treatment is, that pressure at the point mentioned compresses the artery furnishing the blood.

Quick Sailing.

The Cunard steamer Canada, in her last passage to England, made eight hundred and ninety-two miles in three successive days—a greater speed, we believe, than was ever maintained for so long a period at one time by any of the line steamers.

Extraordinary Phenomena.

A communication in the New York Evening Post, says: Saturday, about 3 o'clock, P.M., an electric current, of great depth of volume, extended from below the horizon in the southwest, to and beyond the horizon in the northwest; its northern edge was about 20 degrees south of the zenith, and perfectly straight; it had great intensity of force, and continued for several hours. Before sunset I repaired to the western edge of the Brooklyn Heights, in order to watch the effect of the sun's rays upon this current. When that luminary passed below the horizon, the sun's rays first rested on the extreme south-western portion of the electric current, and imparted to it the richest and most beautiful coloring I ever beheld; this coloring gradually extended until the whole current was decorated, and the visible arc became lighted up by the brilliant coruscations—it was splendid beyond description, but it was a fearful exhibition of a tremor of the earth—it was the bright blossoming of an earthquake of great energy, in which lightning, thunder and snow were born. An equilibratum had both preceded and succeeded this phenomena, followed by an equilibrium of more than nine hours' duration, the first of 53 degrees on the wires, and the second of 48 degrees. A rain storm here followed, and the air was of high temperature. There was a lurid glow resting on the earth while this illumination continued, and it had a quivering, tremulous motion, and there was an invisible current in the lower atmosphere, and I could realize in my breathing that I was enhaling winged air.

[The above would be very interesting, if the eloquence of its inditement did not smell so strong of hash nonsense. Just think of the "bright blossoms of an earthquake of great energy, in which thunder, lightning and snow were born.

Exploration.

Mr. Charles Whittlesey is at Green Bay for the purpose of engaging a corps of *voyaguers* to accompany him on a geological and mineralogical explering expedition in the region North and West of that place lying between the Menomonee and Wolf rivers. Mr. W. is engaged by the Government, and his report will be looked for with a great deal of interest as he has the experience and ability requisite for the service, and the region through which he will pass is supposed to abound in mineral and interesting geological formations. Mr. Foster, passed through from Lake Superior to Green Bay, following down the Menomonee in 1848, discovered in his hurrried passage extensive iron deposits, beautiful flesh-colored limestone, nearly approaching to marble, and other interesting features in the Menomonee country. The worn-out condition of his men prevented his enlarging upon these discoveries.—Mr. W. will commence near where Mr. F. passed, and going westward will come down the Wolf, making such extensive observations as the lateness of the season will allow.

The Crops in France.

Vintage has commenced in the South. The quantity of grapes will be about an average—perhaps rather less than last year. In Champagne the yield is abundant and the fruit of excellent ripeness. Wheat produces an ordinary crop throughout France. Cider is three times as abundant as in ordinary years. Flax has been injured by the bad weather, but the portion untouched by hail is superior. Throughout the western departments the potato crop is described as magnificent and without the slightest taint.

Alabama Coal.

The Chief Engineer and the Commander of the British Steamship Dee, have given a certificate that 106 tons of Tuscaloosa coal is equal to the best Welsh, with which that vessel used to be furnished in the West Indies. This is very important information to the Alabamians,—Mobile will soon be a great entrepot for British vessels trading, by the New Navigation Regulations between the West Indies and the United States.

American Institute—Gold Medals Awarded.

For best Bank Locks, to J. H. Butterworth & Co. Dover, N. J.

For best Piano-Forte, to David I. Van Winkle, New York.

For superior Leather Hose and Pipes, to J. H. Bowie & Co. New York.

For best Gas Fixtures, Chandeliers and Candelabras, to Cornelius & Co. Philadelphia.

For an Equatorial Telescope, to Henry Fitz, New York.

For an Ore Separator, a beautiful application of Modern Science, to Ransom Cook, Saratoga Springs.

For best American Steel, to Adirondack Steel Manufacturing Co., Jersey City.

For best Grist-Mill, to E. Harrison, New Haven, Conn.

For best improved Cloth-Shearing Machine, with Self-acting List-Guards, to Davidson, Park & Woolson, Springfield, Vt.

For best Iron-Planing Machine, to G. B. Hartson, New York.

For best Improved Ventilating Smut-Machine, to Leonard Smith, Troy, N. Y.

For a Gold-Melting Furnace, to Barron Brothers, New York.

For a Lathe for Face-Turning Screws and Gear Cutting combined, a superior article, to G. B. Hartson, New York.

For improved Cop-Spinning and Winding Machine, to J. C. Dodge & Sons, Dodgeville, Mass.

For Swords of elegant workmanship, to Ames Manufacturing Co., James F. Ames Agent.

For best sepecimens of Velvet Tapestry Carpeting, to A. & E. S. Higgins, New-York.

For best specimen of Enamel Wares to Alexander Marshall, New York.

For best specimems of Flint Colored, Plain, and Cut Glass, to Brooklyn Flint Glass Co.

For Pen and Pocket Cutlery, to Waterville Manufacturing Co., Waterbury, Conn.

For best Table Cutlery, to Pratt, Roper, Webb & Co.

For best Daguerreotypes, to M. B. Brady, New York.

For best Lithography, to Edward Lawrence, New York.

For best Statuary-Marble Mantel-Piece, to M. G. Lenghi, New Yerk.

For best Black Broadcloth, to Derastus Kellogg, Skaneateles, N. Y.

For best Cassimeres, to Burlington Mills Company, Burlington, Vt.

For best Fancy Cassimeres, to Millville Manufacturing Company, Millville, Mass.

For best Woolen Long-Shawls, to Bay State Mills, Lawrence, Mass.

For superior Twilled Jeans, to the New York Mills.

For best Cashmere d'Ecosse, to Robert Rennie, Lodi Print-works.

For Fine and Coarse Hemp, to Henry Alexander, Mason Co., Kentucky.

For India-Rubber Goods, with some improvements over last year, to Union India-Rubber Company, New York.

SPECIAL PREMIUMS.

For a piece of Bleached Linen Sheeting, woven by Power Loom, to Henry H. Stevens, Webster, Mass.—Tallmadge Premium (Gold Medal.)

For best piece Silk, 27 inches wide and 60 yards length—Van Schaick Premium, $60 and Bronze Medal.

For best Silk for Handkerchief, 25 yards length—Van Schaick Premium, $20 and Bronze Medal.

For best 10 pounds Reeled (Raw) Silk—Van Schaick Premium, $10 and Bronze Medal.

Complaints are made that the new florin, coined at the mint in London, bears upon it the form of a cross. The master of the mint is a Roman Catholic.

Guano.—Farmers in the Virginia valley are beginning to appreciate the value of this concentrated manure. Two farmers of Clarke have lately received five tons each.

A writer in the Lowell Courier proposes that a Fair should be held there, in the Fall of next year, and suggests a race between three locomotives.

The Common Hemlock for Hedges.

Attention is now being directed to the common American hemlock as a substitute for the thorn and other desiduous shrubs in hedges. It has been subjected to reiterated trials, it is said, in various localities where it is indigenous, and in every instance with the most complete success. It has many things to recommend it; among the more prominent of which may be mentioned its great hardiness, and the slight injury, comparatively speaking, it receives from transplantation. It is also well adapted to every variety of soil, and will flourish with great luxuriance on ordinary lands without previous preparation or manure. Extensive lines of this beautiful hedge are to be seen in various sections of western New York, where its cultivation has been attended, thus far, with the most astounding success. As the tree is an evergreen, its appearance at all seasons is necessarily extremely ornamental, presenting, in its full, dense foliage, a most refreshing contrast to the dreary monotony of the winter scene, and adding, by its many attractive beauties, to the leafy glories of the spring and the affluent summer months. It is asserted, on reliable authority, that of all trees and shrubs yet applied for this purpose, it is the most certain of success, being less liable to injury from the ordinary evils which so frequently prove fatal to the thorn, the locust, and other cognate species of plants, and in no way objectionable in consequence of root-sprouts, by which the above-named productions foul the contiguous soil, and produce a suburban progeny, extremely detrimental to cultivation, whether directed to the production of root-crops, grain, or grass.

[The above is selected for its value, if true. There is nothing of more importance to our farmers than good live fences, that can be maintained at little cost.]

Light to the Born Blind.

We learn from the Tuscaloosa Observer, Ala that Dr. Read of that place performed a most successful operation for cogenital cataract about a year since, but the account of which was not published until the results were fully developed. The subject was a girl of fourteen years; both eyes were affected, and both were relieved by the operation. In a few months she was enabled to learn to knit and to sew, and could distinguish acquaintances at thirty paces distance, without spectacles; her sight is still gradually improving. The difficulty and the delicacy of the operation for cataract will be realized, when it is remembered that the obstacle to vison which has to be removed is situated at the centre of the eyeball and not upon its surface as is commonly supposed.

Disturbance on the Baltimore and Ohio Railroad.

The contractors on the railroad west of Cumberland have considerable trouble to keep down the spirit of rioting so frequently manifest among the laborers on the line. The Civilian says that the Connaught men driven from the Central Railroad, in Pennsylvania, in June last, by a Far-Downs, being now strong in numbers west of that place, indicate a disposition to exclude their opponents from the work. Some scenes of violence have already occurred, and many more are looked for.

A pleasure party, while returning to Lyons in a canoe, steered for a bright light which they supposed was a landing place, but which proceeded from a water-mill. Three were torn and submerged, while the fourth sprang into the wheel and revolved with it until relief came and he was rescued.

A sewer in London exploded, blowing up the cast iron plates covering the man holes, and shocking the whole neighborhood. The flames came through the grating over the gutter holes. The explosion was caused by attempting to draw off the pestilential vapor of the sewer, by connecting it with the chimney of a soap factory.

The London Herald calls the United States, "the non-religious nation." It may be indebted to some of our religious papers for the hint, but there is one thing about our religion: We pay for it without being forced by law, or the bayonet.—What other nation does it?

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Artesian Wells.

The origin of Artesian Wells is very ancient—the first diggings of which we have any record were made in 1126, in Artois, in France—hence their name Artesian wells. Divers European nations, among which are England, Germany and France, claim the priority of the invention; but both the Chinese and Egyptians were acquainted with Artesian wells. The nature of Artesian wells is held to be that the subterranean waters are thrown to the surface by an expansive force resulting from the central heat, and independent of any law of gravity—the same as water is suspended as moisture in the atmosphere, and sustains itself there until some cause changes its condition, then it precipitates itself in the form of rain, &c. The earth's crust is composed of parallel beds, which are separated by joints well drained, and these beds have been modified by the successive deposits of water which have coursed at different epochs, the surface of the continents. The earths regularly stratified in horizontal beds have received successive shocks which have dislocated and inclined them. The Artesian well is but a research made by means of the drill for a stream underground, whose reservoir will give it sufficient force to cause it to ascend to the surface of the earth. When these waters, which are met by the drill, do not mount to the surface, it proves conclusively that the location of the work is higher than the level of the reservoir which nourishes these streams. Such waters are called ascending waters, but when, on the other hand, the waters elevate themselves above the earth's surface, the work has been executed *en contre bas*—that is, below the level of the source of the ascending stream, and these streams are called spouting waters. It is therefore necessary that a sound geological survey should be made in locating the well, in order to obtain a spouting instead of an ascending stream. Before determining the location of an artesian well, it is necessary to examine the section of country, the level of its rivers and valleys, and the dip of the strata. With these given, the scientific man can determine approximately the necessary depth of the well. As a general rule, attempts to obtain water with the bore should be made in the earths only of formation, and not in the primitive earths. Artesian wells not only give soft water to cities, towns and villages, but are equally valuable to extensive farms and factories, guarding them against the long droughts which sometimes happen in summer time.—Were the theory of the Artesian wells better understood, manufacturers would not suffer for want of water in the dryest summer time; their reservoirs could be constantly supplied; and the extensive farmer could also derive an equal benefit by judicious irrigation. These borings must, of course, be conducted by experienced men, who will fitly and appropriately select their locations for digging, and who will combine geological knowledge with practice, but at the present moment the theories of geologists are undergoing a severe test at Charleston, S. C. Time will try all. Within a few years, this means of obtaining water has been extensively prosecuted in Europe, where there are now more than 3000 wells.—Venice, situated on the Adriatic sea, and entirely surrounded by salt water, with a population of 125,000 souls, is supplied abundantly by four Artesian wells, which were made in 1847. The wells of Grenelle, at one of the extremities of Paris, furnish water to more than 70,000 people. The inhabitants of the town of Sheerness, England, are supplied with water from two Artesian wells. The provinces of Modena and Bologna. in Italy, for a long time have been supplied in the same manner, and so have some parts of London. The quantity of water to be obtained from a well depends entirely upon its geological and hydrographic conditions. It may vary from 100 to 1,100 gallons a minute, or from 144,000 to 1,728,000 gallons every twenty-four hours. This will depend greatly upon the talents of the engineer who is charged with the work; for after having met the first stream, an experienced man must decide whether or not it is best to go further in search of better jets, at a greater depth. The depth to which it is necessary to penetrate, and the difficulties to be overcome, vary greatly, according to the localities.

The Inventions of this Age.

This is the age of great discoveries in all directions. The railroad has become the magician's rod, the electric telegraph a wire of wonders, and ether and chloroform mysterious alchemies. A tooth can be extracted, a leg cut off, or an incision made into the most sensitive parts, and the patient at the close ask if the operation has begun. Speeches uttered at ten o'clock at night are printed while we are asleep, and they appear in beautiful type upon our breakfast tables at eight o'clock in the morning. The rapidity with which change follows change is also remarkable. Things that took a century to do some time ago, are now finished off in the course of a day. A new feature, however, of the present age is, that religious men have ceased to be afraid, as they used to be, of the discoveries of science. Religious men, on the contrary, hail them. They used to be in fear lest light from the stars should put out the sun of righteousness; they used to be apprehensive lest the hammer of the geologist should break the rock of ages, or lest some arrangement among the strata of the earth discovered by some Buckland, should discredit the truth of God.

Do not be afraid of the discoveries of science; do not stand in the way of truth with your silly fears. Let truth emerge from the mine. Let it come from the laboratory of the chemist; let it descend from the observatory of the astronomer, it will fall in with and not darken the truth of the gospel. Another interesting feature is, that mind, genius, and talent are much more appreciated in the present day, under whatever guise, or garb or denomination they appear. Galileo saved his life by recanting the conclusive inductions of science. Locke was banished from Oxford; Selden was thrown into the tower; Milton sold the copyright of "Paradise Lost" for five pounds. In contrast with this, it is only needful to refer to the immense sums received for their writings by Scott, Dickens, Macaulay, &c. Such is the force of real genius, that it will publish itself, though its possessor should be dumb, and command the homage of all, while it appears to be the willing servant of all. Once it had no chance of emerging from obscurity, except by being tied to some great patron's tail. Now, the noblest patronage is fair opportunity.—Mind is admitted to be a competent element of true greatness. Coronets, prebends, purple robes and lawn sleeves, M. A.'s and D. D.'s are more and more felt to be mere wrappage; while the goods are in the inner man, the substance is the soul.

The Bread-Fruit Tree.

The earliest account of the Bread-Fruit, is by Captain Dampier, in 1688. "The Bread-Fruit," says this navigator, "grows on a large tree, as big and high as our largest apple-trees; it hath a spreading head, full of branches and dark leaves. The fruit grows on the boughs like apples; it is as big as a penny loaf when wheat is at five shillings a bushel; it is of a round shape, and hath a thick, tough rind. When the fruit is ripe it is yellow and soft, and the taste is sweet and pleasant. The natives of Guam use it for bread. They gather it when full-grown, while it is green and hard; then they bake it in an oven, which scorcheth the rind, and maketh it black; but they scrape off the outside black crust, and there remains a tender thin crust; and the inside is soft, tender and white, like the crumb of a penny loaf. There is neither seed nor stone in the inside, but all of a pure substance like bread. It must be eaten new, for if it be kept above twenty-four hours, it grows harsh and choky, but it is very pleasant before it is too stale. This fruit lasts in season eight months in the year. during which time the natives eat no other sort of bread kind. I did never see of this fruit anywhere but here.—The natives told us that there is plenty of this fruit growing on the rest of the Ladrone Islands; and I did never hear of it anywhere else."

The scientific men who accompanied Captain Cook in his voyages, came home with the most enthusiastic ideas of the Bread-Fruit. Dr. Solader calls it "the most useful vegetable in the world," and urges that no expense should be spared in its cultivation. The mere idea of bread, the most valuable food of man, growing spontaneously, was doubtless calculated to excite attention—almost, perhaps, as strongly as the subsequent description of the poet. The mode of propogating the Bread-Fruit is not, indeed, difficult; for the planter has only to lay bare one of the roots, and mound it with a spade, and in a short space a shoot comes up which is soon fit for removal.

Europeans are much fonder of the Bread-Fruit than negroes. They consider it as a sort of dainty, and use it either as bread or in puddings. When roasted in the oven, the taste of it resembles that of a potato, but it is not so mealy as a good one.

Chemitype Printing.

The art of engraving on wood is now generally considered to have arrived at its utmost pitch of perfection, and indeed the splendid effects which are occasionally produced by the artists of the present day, leave fault-finders little to say on the point. Still it may be urged, that although no question can be raised as to the beauty and artistic effect of illustrations of this kind, yet there are numerous deficiencies in its practice, which tend to prevent the supply of really good works being equal to the demand—these deficiencies are indeed inherent in the material used, so that we have slight hope of overcoming or even mitigating them. Nevertheless, we are without a single plan which may be said to offer even any advantages at all to be compared to those offered in wood. Glyphography, gypsography, and anastatic printing have severally passed in array before the tribunal of public opinion, and still, the effects produced by any of these three, are pronounced by the most competent of arbitrators, to be immeasurably inferior to engravings on wood. A fourth scheme has been added to the list, with the name of Chemitype Printing. By this method, an etching or engraving made in metal in the usual way, may be converted into a high relieve stamp, to be used for printing on an ordinary press as is the case with common wood engravings. The following statement may in general illustrate the character of the invention: On a highly-polished plate of pure zinc an etching or engraving is made in the usual manner, which, under common circumstances, would be fitted for impressions on an engraver's press, having the same harmony and proportion of all the respective etched or engraved lines. The tracery, thus deepened, is now to be fused or melted down with a negative metal, and the original metal plate, (zinc) corroded, or etched by means of a certain acid, thus making the characters of the former drawing appear in the shape of a high relieve stamp. This effect is only produced in consequence of the metal composition in the lines of the tracery not being acted upon by the acid on account of the galvanic agency subsisting between the two metals, and the acid corroding only the zinc.

After these details there cannot be the least doubt of the specific difference between the chemitype printing and glyphography, relieve etching in copper, and other similar artistical processes and practices lately invented. Its principle rests upon the positive and negative nature of the metals. As every drawing on the metal plate is completely exact on the relieve stamp, the practice is absolutely independent; the exact and accurate representation of the original sketch is always to be expected. Wood-engraving cannot in most cases, be superseded by this novel method; but in many other instances the new practice is preferable, chiefly when colored printing is required, in the representation of maps, plans, architectural drawings, &c., &c. At the same time, the correction or improvement of any drawing can be much better executed than in wood-engraving.

It is impossible to say what will eventually be the fate of this invention, whether it is to follow the list of its predecessors just enumerated, or to ascend through successive stages of improvement, so as to cope successfully with our present well-tried system.

In the representation of plans, engineering, and architectural drawings, where, unlike the free sketches in which wood shows to so much advantage, and exactitude of lining, and attention to a microscopic degree of minuteness is indispensable, we should be inclined to say that Chemitype offers some advantages. In the illustration of scientific works, where the artist is fettered by the absolute necessity of adhering to the requisition given above, not only is wood incapable of giving a sufficiently fine and even a line, but is not attainable in sufficiently large blocks for drawings of even moderate size, and the disadvantages attending the junction of several pieces, is clearly shown by the white lines which disfigure all cuts on blocks exceeding a few square inches in area. To attain the first class of these desiderata, copper-plate-engraving must be substituted, and here again, we have the evil, of a difficult and expensive mode of printing, which precludes the introduction of intaglio engraving into the majority of works. Neither of these disadvantages can affect the new process.

Effects of Climate on the Anglo Saxon Race.

The following singular information and views respecting the effects of Climate on our race, are taken from "Lyell's Second Visit to the United States," and will be found of no inconsiderable interest.

I suspect that the principal different aspect or the Anglo Saxon race in England and America is the climate. During both our tours through the United States, my wife and I enjoyed excellent health, and were delighted with the clearness of the atmosphere, the bright sun and the great number of cloudless days; but we are told that, if we stayed a second year we should feel less vigorous. Many who have been born in America, of families settled there for several generations, find their health improved by a visit to England just as if they had returned to their native air; and it may require many centuries before a race becomes thoroughly acclimatised. The great difference of the species of indigenous animals and plants in North America, those of the Middle and Southern States being almost all distinct from the European, points to a wide diversity of climate, the atmosphere being drier, and their being a much greater annual range of the thermometer than in corresponding latitudes on the eastern side of the Atlantic. Even so cosmopolite a being as man may demand more than two centuries and a quarter before he can entirely accommodate his constitution to such altered circumstances, and before the successive generations of parents can acquire themselves, and transmit to their offspring the new and requisite physiological peculiarities. English travellers often ascribe the more delicate health of the inhabitants here to their in-door habits and want of exercise. But it is natural that they should shrink from exposing themselves to the severe frosts and long-continued snows of winter, and to the intense heat of the summer sun. An Englishman is usually recognized at once in a party, by a more robust look, and greater clearness and ruddiness of complexion; and it is surprising how distinguishable he is from persons born of English parents in the United States. It is also a curious fact, which seems generally admitted, that the native Anglo-Australians bear a considerable resemblance to the Anglo-Americans in look and manner of speaking, which is a mystery, for there is certainly in that case no analogy between the climates of the two countries.

The Expense of Whiskey.

Robert Rantoul, jr., in a recent temperance address, asserts that the single state of Massachusetts might save an amount of money, in the space of thirty years, of greater value than the whole wealth of England, by simply abstaining from the use of intoxicating liquors; that, from the time of the Revolutionary war, the money expended in this country, for alcoholic drinks, has exceeded in value that of the whole present property of the nation, personal and real.

[The above is from an exchange, and must be exaggerated.

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New Inventions.

Invention in Furnaces.

"We have been shown, at the establishment of Messrs. Burns, Carter & Reed, an invention for saving the consumption of fuel in boiler furnaces. It is a triangular shaped bottom, pierced with holes and communicating with the atmosphere by pipes underneath. It can be readily put into any furnace without difficulty, and it is said that a saving of one-third in using wood, and of one-half in using coal, is effected by this invention. If this be the case, it will be an important saving in the expense of fuel to our steamers."

The above is from the Detroit Free Press, and we have merely to say that a model of this improvement is now in our possession, sent by the inventor, Mr. Burns, who intends to take out a patent. Its great object is in spreading or distributing the air equally among the fuel, in the same way that an argand burner is applied to lamps. The air is introduced through a self-regulating tube, and is in part heated before it comes in contact with the fire. By this apparatus, steam could be introduced, decomposed, and the hydrogen set free and ignited, to create a most intense heat, along with the combustion of the carbon or coal.

Improvement in the Construction of Wagons and Carriages.

Mr. James Patterson, of Franklinville, Cattaraugus Co., N. Y., has made a most excellent improvement in the construction of carriages and wagons, which must ultimately, in our opinion, be of no little pecuniary benefit to himself and the same to the public, as carriages, &c., can be made cheaper and of greater strength by his improvement. By an improvement in the bush of the wheel-hub, no matter how much it may wear, it can be repaired at a very small cost, and made as good as new. The axles are formed upon an improved principle, and the reach, braces, and the fills, can be taken to pieces in a few seconds, packed up into a very small bulk, and put together again in equally as short a period. The most singular thing about it is, that there is only one screw bolt used in the whole of it, to unite the two diagonal braces to the reach, and yet every brace can be taken apart by itself. The inventor has taken measures to secure it by patent.

Stave and Shingle Machinery.

The Stave machine of Mr. C. B. Hutchinson, of Waterloo, N. Y., illustrated in No. 2 of the present volume of this paper, has been put in operation by the ingenious inventor, and performs most admirably. The machine has cut 18,000 staves per day, attended by five hands, and as many barrel headings; it has also produced 25,000 shingles in the same length of time, and does the work well.

The above statements are from respectable authority, and from our knowledge of the principles of his machine, we should think it capable of executing the very best of work.

New Railroad Car Wheels.

At the Fair of the Franklin Institute Messrs. Murphy & Saurman exhibited some cast iron wheels, which attracted considerable attention. They were made with plain spokes, but the hubs were cast solid, and to prevent cracking by contraction in cooling, a draught of air is sent through the hubs, to cool there first, while the heat of the rim is retained by being enclosed in an air-tight casing of brick work, until the hub is partially cooled. The face of the wheel is chilled by coming in contact with a rim of cast iron.

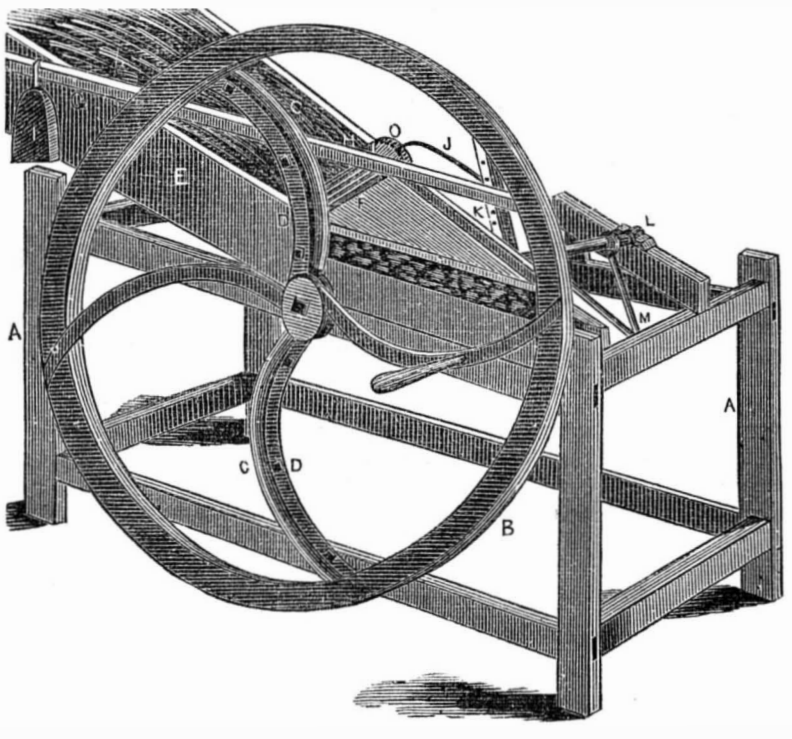
Drummond Lights in Broadway.

The Tribune discusses the advantages of substituting the gas lights of Broadway by two or three Drummond Lights. Not a bad idea, we think. There is another thing we should like to see, as a reform in the lighting line, viz., to have the dials of the City Hall clock made transparent and illuminated inside, so as to show the hours to passers by, at every period of the night. Various clocks in the city might be illuminated in this way, at a very trifling expense.

Wooden Suspension Bridges.

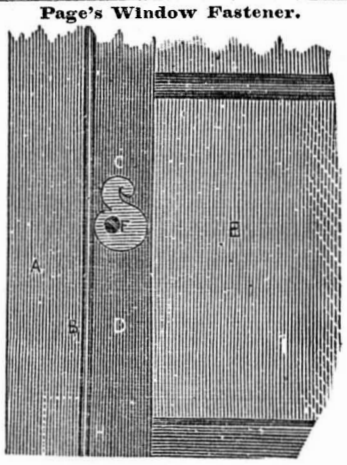
We see it stated in more than one of our exchanges, that Mr. Ammi White, of Concord, N. H., has invented what he and many scientific mechanics think will be a substitute for the wire cable. By *dowelling* boards together, making them everlap each other in the construction of the pile, and then fastening them with spikes, he forms a body of any length, and as incapable of divulsion as a tree. He has made a model 500 feet long and six inches square, and elevated 20 feet, which has bore the weight of about five tons, and is capable, in the judgment of Mr. White, of bearing twenty tons. Like wire cables, these wooden ones are to be fastened to firm abutments, and then thrown across rivers over which suspension bridges are to be erected. It is also stated that the best of the wooden cables will not cost more than one-eighth of those of wire, and will be stronger as well as cheaper, but this is nor correct. No cable is so cheap as a wire one. A strand of No. 10 wire, will support a weight of 500 pounds, and a wire cable of 4 inches in diameter, will support a weight of 275,000 pounds. What size would a wooden cable be to support this weight? We saw last year, a model of a wooden bridge made by Mr. McCracken, of Bleecker street, this city, upon the same principle, as it appeared to us, as the one above mentioned, but still there may be a great difference. We often find that men who describe works of art, do it in such a manner as to convey a wrong idea of its principle and construction.

BERTHOLF'S IMPROVED STRAW CUTTER.



This is a Straw Cutter improved by Mr. H. Bertholf, of Sugar Loaf, Orange Co., N. Y. It has some points about it that are essentially good, and worthy of attention. In the first place, it is one of the most simple machines, and the parts can all be made strong and durable, easily put together, and the expense of construction must be very moderate. In the second place, it cuts the stalks, or straw, lengthwise with the grain, thus rendering the cutting of the same very easy, and with less power, as every person knows, than by cutting across the grain. This is a perspective view, which somewhat hides the gearing for feeding, on the other side, in order to show how the knives cut the straw or stalks lengthwise. A A is a stout frame; B is a fly wheel, with spokes, D, on it, to which are secured by nuts two curved knives or cutting blades, C C. This cutting apparatus, it will be observed, is of the most simple construction. E is the feed-box, in which the straw, H, is placed. It will be observed that the shaft of the fly wheel is set to the feed-box for the knives to cut the stuff at an angle of about 45°; F is an angular board below which the straw is fed to the cutters by the fluted feed roller, O. There are two of these rollers—the straw being drawn in between them, and *they* are moved by ratchets, S, biting into ratchet wheels on the ends of the said rollers. These ratchets give an intermittant rotary motion to the rollers, and they receive a reciprocating motion from the main shaft, L, by vibrating levers, M K. These are not clearly seen, but the principal feature of the machine is, viz., the mode of cutting; G is a lever which, with a bow, (not seen), rests upon the axis of the feed roller, O, to graduate the pressure on the same by the weight, I. Mr. Bertholf exhibited his machine at the Fair, and he has taken measures to secure a patent.

Page's Window Fastener.



This is an improved Window Fastener, invented by Mr. Lewis B. Page, of Hartford, Ct., and secured to him by letters patent. Its simplicity is its great recommendation, and besides it acts as a self-fastener. C is the fastener; it is a small eccentric piece of metal fixed on the sash, D, of the window, close to the case strip, B, of the window case, A. E is the window light. This engraving is a section to show the fastener plainly. In raising the windows the hand is placed upon the fastener, C, keeping the curled ear at the top, and whenever, (at any part) it is desired to arrest and retain the window, all that has to be done is to leave the fastener to take care of the window and itself, which it soon does by the heavy side turning downwards, making the fastener press with great power on its eccentric axis, F, against the strip of the case. H is a slot, in dotted lines, into which the fastener swings and locks the window, with the case, thus preventing it from being lifted by any person outside; and in fact it cannot at any time be disturbed from the outside, on windows open at the top, as the harder it is pressed downwards, the more immovable it becomes. In warm weather this is a capital idea for all persons in our cities, who desire to have their windows open at the top for ventilation, and who are now afraid to do so on account of the prowling burglar. This window fastener will no doubt come into very general use.

Telegraph Invention.

The following is from a communication to the St. Joseph Register, by Col. Speed, President of the Erie and Michigan Telegraph Co., relative to an improvement invented by the Colonel.

"The invention," he says, "will enable us to write from Chicago, St. Louis or New Orleans, to New York, Boston or Halifax, without re-writing; thereby avoiding the errors made by the copyist at the re-writing stations. The improvement consists in making one galvanic circuit break and close a second circuit, both ways, the second a third, and so on, for an unlimited distance; the operator at the extreme end being able to break and close the different circuits, and consequently write on all the Registers connected with the through wire, without the attention of any one, at those stations not receiving the message.

Lines of telegraph cannot be worked advantageously, even with my new insulators, for more than four or five hundred miles in one circuit. To work a line for eight or ten hundred miles in one circuit, would require so powerful a battery and one of such high intensity that much of the electric current would be lost in consequence of imperfect insulation—our best non-conductors being merely very poor canductors. My improvements will enable us to divide the lines into such circuits as can be worked with certainty in bad weather, and will send a message from St. Louis or New Orleans to New York without re-writing."

[This feat has been accomplished before by the Chemical Telegraph, and there was a gentleman in this city last year who said that he could do it on the Electro-Magnet Telegraph, and he was informed, we believe, by the operators of Professor Morse's Line, in this city, that it was not new, since which we have heard no more about it. Perhaps the original inventor was Col. Speed, and as such was known to the operators here.

Improved Locomotive.

A new engine has been placed upon the Boston & Worcester Railroad, manufactured by Mr. Ross Winans, of Baltimore, which has some peculiarities about it that should be known to all our engineers. It is made for burning anthracite coal, and has a fire box 6 feet in length 3½ in width and about 2 feet in depth, which will contain at least a ton of coal. The fire grate is composed of stout, separate bars, so arranged as to permit the fireman to turn them and shake out the ashes, even when the doors of the fire-box are closed.

It is 28 tons weight, with two driving wheels 7 feet in diameter, and eight supporting or truck wheels—the driving wheels being in the centre. It is made so that the adhesive power or weight may be thrown upon the driving wheels, for the purpose of ascending steep grades, and this adhesive power can be concentrated or spread over the whole of the wheels, according as it is needed. We understand that for a short distance it attained the speed of 60 miles per hour. Mr. Whistler Jr. C., E., spoke very highly of Mr. Winans' coal burning engines in his report, on the Reading Railroad, Pa. Working, drawings, and a full description of one of them will be found in Mr. Emil Reuta's new work, "American Locomotives."

Franklin Institute.

At the Fair of the Franklin Institute, held last week, there was exhibited a curiosity of an air-tight high pressure engine, made by P. Pellories & Co., on the old Oliver Evans pattern It had half a beam and the pillar, sustaining it oscilated on a hinge at the base, thereby retaining its parallel motion. It worked with great ease. Visitors who have been to Philadelphia speak very highly of the exhibition. We are happy to hear this.

Herr Ferdinand Sommer, professor of music to the Prince of Wurtemberg, has invented a new instrument, which he has named Euphonia. It possesses great power, and tones deeper than the Ophicleide,—so says foreign journals. Well let him play away on it.

We see it stated in some of our exchanges that wire is becoming a good substitute for lathe.

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Scientific American

NEW YORK, NOVEMBER 3, 1849.

An Under-ground Railroad in Broadway.

Many plans have, from time to time, been brought forward, to rout out the long train of omnibuses that so often block up the principal street in our city. Two elevated railways, and one laid down on the causeway, have been at different times brought forward to the notice of the public. These schemes have for some time disappeared from the public mind, and omnibuses are still going on under a greater crowd of canvass than ever. Our opinion was in favor of a track on terra firma, because we could see no good reason for travelling by railway at a greater elevation. Our streets are indeed somewhat thronged at different hours of the day, but we do not think that this evil would be remedied by another—the elevated railway—for in the light of an evil we lookupon it. Our streets are not at all to be compared to London for a press of pedestrians, or carriages, nor will they for a long time to come, although that time will not be always distant, as New York bids fair, at present, to be at some day, the Metropolis of the civilized world. But leaving these things to the one side at present, let us look to another scheme now proposed, for a railway in Broadway.—"What is it?" some will ask. Nothing less than a railway underneath, instead of one above—railway life down stairs, instead of railway life up stairs. The idea is at least original, but any thing except feasible, that is so far as the expense is concerned, for there would be no difficulty in executing the work.

The plan is to tunnel Broadway through the whole length, with openings and stairways at every corner. This subterranean passage is to be laid down with a double track, with a road for foot passengers on either side—the whole to be brilliantly lighted with gas. The cars, which are to be drawn by horses, will stop ten seconds at every corner—thus performing the trip up and down, including stoppages, in about an hour.

At the present moment we would be sincerely grateful for the extension of the Russ pavement throughout Broadway and our principal streets; and at best, we do not see why a rail road could not be built with a double track in the middle of the causeway. This would do away with so many stages, and there is not a single good objection that can be urged against it. The expense of building would be but small. The carriages might be magnificently built, and two or three trains might be going up on one side, and two or three coming down on the other—round about continually. Their motion along the streets would scarcely be heard, and they would be an ornament to it, in comparison with uncouth looking omnibuses. A double track in Broadway would only occupy 10 feet in breadth, and the rest of the street, on both sides, would be free for the carriages of our nabobs, to act as flanking corps, or the carts of our sturdy carmen, to rumble along with perfect ease and independence. This plan of the double track embraces economy and safety, and any part of the street may be excavated for sewers, &c., without stopping its operations in the least, as the track could always be supported underneath in such cases, and thus we would have a continual stream of locomotion, through Broadway, from January to December.

Wheeling Suspension Bridge.

The Wire Suspension Bridge, at Wheeling, Va., over the Ohio River, is completed, as we learn from the Wheeling papers, and the scientific and daring engineer, Charles Ellett, Jr., has added another laurel to his chaplet of honor, in thus having successfully erected the longest suspension bridge in the world, an honor to our country, and especially to the good folks of Wheeling; to one of her respected citizens, James Baker, Esq., we are indebted for a very neat pamphlet of Mr. Ellett's on the subject, from which we derive the following particulars, and perhaps we may say more about it at some other time.

The flooring is supported by 12 cables of iron each cable 4 inches in diameter, composed of 550 strands of No. 10 wire, and is 1,380 feet long, and from centre to centre of the abutments, the flooring is 1,010 feet long, 24 feet wide, with two foot-ways, each 3½ feet, and an intermediate carriage-way 17 feet wide. The cables rest on iron rollers, placed on the summits of the towers, the movements of which will relieve the towers of the strain, and are anchored into the heavy masonry of the wing walls at each end of the bridge. The length of the wood-work which rests on the cables, is 960 feet; its weight 546 lbs. per lineal foot, or 524,160 pounds, of 262 tons in the whole. The weight of each lineal foot of the 12 cables, composed of 6,600 strands, is 330 pounds, making, with the weight of timber, bolts, castings, suspenders, &c., 920 lbs. per lineal foot, or 441 tons as the permanent weight of the bridge itself. Above its own weight the bridge is constructed to support the greatest transitory weight that is ever likely to be, or we may say, can possibly be brought upon it, such as two columns of teams and the sides loaded with men, so as to weigh, jointly, 297 tons, or the average weight of 4,000 men, and the strength of the bridge is caculated to support three times the amount of tension that ever can be brought to bear upon it. This bridge will no doubt last long as a monument of American skill and enterprise.

Free Schools in New York.

The question of Free Schools in New York is to be decided at the coming election. At present, the schools in the greater portion of the State are supported in part by the public and in part by the scholars. This question will no doubt be carried triumphantly. We have conversed with thousands of our mechanics and yeomen, upon this subject, and in general they are in favor of it. It is the moral duty of the State to place the means of reading and writing within the possession of every child. No man can vote intelligently who cannot read, and no man can be a fit citizen of the Republic, unless he reads the opinions of our Statesmen upon different questions. There is some opposition to this measure, not of party, but bigoted ignorance. We go for educating the children, because we believe that those countries which are most enlightened will always be most distinguished, both for virtue and greatness. The only objection that has been advanced in the shape of an argument against Free Schools is, "that religion is not taught in them, consequently they must be ungodly;" and those who alledge this reason against free schools, say that the State is incompetent to teach religion. We can snuff out that argument, as easy as snuffing a penny rush light. Charity is a religious duty, consequently as the State is incompetent to teach religion, it must be incompetent to practice it (the best of all teachings,) therefore it has no right to provide by law for the maintainance of the poor. This argument is exactly on a par with that used by the objectors to the Free Schools. It is the interest of the man of property to see that the children of the poor are educated, for you may reason with an intelligent people, but the ignorant can be led to war against law, reason, and order, by appeals to their passions. We want all the boys and girls to learn to read, write and cypher, at least, so that when they grow up they will be able to read the Scientific American.

New Channel to New York Harbor.

Lieut. Woodhull, U. S. N., who has been examining the Hurl Gate and mouth of the Harlem River, says that the former is obstructed by a single rock and by three small areas of shoals, which might be removed for a sum less than $10,000, the effect of which would be, that New York would yet have another channel to her harbor. It seems also, that an old stone bridge once connected New York and Ward's Island, the piers of which yet remain and materially obstruct navigation, but which for $3000 could be, by a single blast, entirely extirpated.

Bridge to Brooklyn.

A project now occupying considerable attention in this city, is the erection of a suspension bridge across the East River to Brooklyn. If such a work is to be done, Charles Ellett, Jr., C. E., is the man for it, but first of all we must consult Uncle Sam, he holds the key of the project.

Late News from Europe.

The British army is recruiting in every town and city in the kingdom, and the utmost activity prevails in the dock yards. All the talk among the people is that there will be a war with England and Russia, and they expect the United States to join with England; but such an event cannot happen. The Mosquito question, between this country and Britain, can be easily settled by the American Company that has engaged to construct a canal across the isthmus, recognizing the Mosquitos right to a portion of the route. This is the tone of British feeling. Well, this can easily be done. It is all one to the Yankee, who owns the territory, if he owns the right of way. When he gets this wedge in South America, he will soon split rails to fence in a wide lot there, and this is the peculiarity of our government, that every new State is not a conquest, in that sense of the word, but a government as independent as it was before, only modified to be legally embraced in the marriage compact of our great confederacy.

An Inventor Dead.

By late accounts from Europe, we are informed that M. Maderspash, the inventor of the iron arched bridge in Hungary, put an end to his life, from despair, owing to the cruelties practised upon his family by the blood-thirsty soldiers of the Austrian army.

The Turkish government has demanded of Kossuth and the Hungarian Patriots, who found refuge in Turkey, to renounce their religion or submit to be delivered up to Austria. Kossuth, by letter, informs Lord Palmerston of this, and requests his interference.

Rich's Water Wheels.--Extraordinary Work.

Messrs. Munn & Co.—*Dear Sirs:* I enclose a notice cut from the "Columbus Enquirer, of the 16th inst., of the performance of a pair of Burr Stones, driven under 11 feet head, by one of Reuben Rich's Centre Vent Water Wheels, an invention of a resident of your State. Can it be beaten? In this part of the world it is called rapid work. Immediately after the trial spoken of by the editor, I saw the same stones grind out three bushels in 2 minutes and 21 seconds—and beautiful meal at that, and you know in this State we are judges of corn bread.

A Subscriber.

Columbus, Ga., Oct., 1849.

Here follows the notice:—

"The Palace Mills.—We visited these splendid mills on Saturday last to witness their performances in the way of grinding. It is unnecessary for us to say it excelled any thing we ever saw. Several bushels were ground at the rate of one bushel to 58 seconds, which is equal to about sixty-five bushels an hour. The meal was good, cool, and uninjured by the almost frightful rapidity of the runner. Major Winter set out with the determination to have a set of mills equal if not superior to any in the Southern country, and from what we have seen there can be no reasonable doubt but he has, and will succeed, not only to his own wishes, but to the convenience and benefit of his fellow citizens."

Descent of Washington.

A most beautiful letter, purporting to be from the Earl of Buchan, to Mrs. Washington, sympathizing with her in affliction, on the death of her husband, was published in the Washington Globe, of the 23d ult., and was published a short time before in the Republic. We intended to inquire of the Republic if it could tell whether that letter could be trusted or not, for in it the Earl calls Washington his "*revered kinsman* and friend." Now the Earl was of an ancient noble Scottish house, and the general opinion, (the one we have always had,) is that Washington was of direct English descent. If Washington was any relation of Buchan, was it by the maternal side? Of what family was his venerated mother? An answer to these questions, as a matter of history, would be very interesting to tens of thousands, both at home and abroad.

Fair of the American Institute.

The Fair closed on Thursday evening last week. We understand that the amount collected is not small. Gen. Talmadge delivered the closing address. The complaint which he made last year can no longer be made—viz; no competitor for his medal for American Linen. The list of gold medals is on another page, and among them *one* for a piece of power loom American Linen. We have no other comments to make, except to say that we will yet publish engravings of many articles that were exhibited there.

The Fair and the Scientific American.

A correspondent writing from New York to the Utica Gazette, under date of Oct. 18th, in speaking of the Fair of the American Institute, thus alludes to the Sci. Am.:—

"One is particularly struck with the amount of scientific inventions, and noticing some that had a familiar look, I was induced to pay attention to the manner in which this business of granting patents is conducted. Finding one of the proprietors of the Scientific American, which by the way is one of the most valuable papers published in this city, I requested the information of him, and was shown over to his office, which contains a department exclusively devoted to the securing of patents. There were drawings of almost every invention on file, and with them a complete list of every patent that has been issued in this country. I found that did one but know where to apply for information, it was readily to be obtained: the scientific library of this establishment, amounting to over 200 of the most valuable works, taken in connection with the other departments, render it well worthy a visit from those in the city, or the remembrance of those in the country who desire reliable information."

Claims of Patents.

Having been solicited, from many quarters, to publish the list of Patent Claims, the Scientific American being looked upon as the repertory of patent knowledge, we will commence to do so next week. We would have done this long before, but in many cases, we honestly believed that it was not right, especially to those who wished to secure their patents in England; but we have used our influence to get the British laws modified in this respect, and there is now a fair prospect of this being accomplished; and at the present time there is a government commission sitting in London, for the purpose of gaining information towards a reform, of their patent system—something devoutly desired both by American and English inventors.

General Training Day.

Thursday last week was general training day in our city. These scenes are always foolish exhibitions to us. All the good they perform is negative, by delighting youngsters and making them play the truant from school. The affair was very showy but nothing American about it. Some of the companies were without breeks and wore the kilts, like the Scots Guard in the British Army. Some were in the red coat array of other British regiments. Some wore the Austrian uniform, some the French, some the German, some the Italian—and some were indescribable. Their appearance was harlequin enough.

Beautiful Sample of Cotton.

We have received a beautiful specimen of Cotton as it came from E. T. Taylor & Co's. improved gin, Columbus, Ga. We have exhibited the sample to many gentlemen well qualified to pass an opinion upon its merits, and all spoke highly of it. Mr. Coffin, of Charleston, S. C., a gentleman of scientific taste and attainments, who has extensive property in S. C., and knows all about the qualities of Cotton, passed a high encomium on it.

Geo. Wadleigh, Esq., of the Dover Inquirer, will please accept our thanks for the favorable notices of us, which have recently appeared in his journal.

Subscriptions are raising for the construction of a handsome free church, with a lofty tower, as a monument to the memory of the late Dr. Chalmers, at Austruther, near Fife—the place of his nativity.

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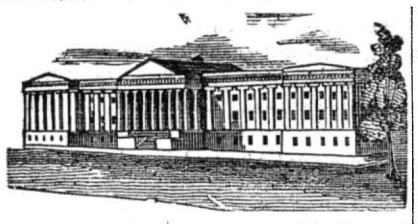

LIST OF PATENTS

ISSUED FROM THE UNITED STATES PATENT OFFICE,

For the week ending October 23, 1849.

To Erastus B. Bigelow, of Clintonville, Mass., for improvements in Jacquered Looms. Patented Oct. 23, 1849.

To James R. Stafford, of Cleveland, Ohio, for improvement in Cooking Stoves. Patented Oct. 23, 1849.

To Elias M. Ray, of Norfolk Co., Mass., for improved Spring Latch Bolt. Patented Oct. 23, 1849.

To Enos G. Allen, of Boston Mass., for improvement in Planing Machines. Patented Oct. 23, 1849.

To Benjamin F. Miller, of New York, N. Y., for improvement in the construction of Iron Stairs. Patented Oct. 23, 1849.

To William A. Lighthall, of Albany, N. Y., for improved arrangement of the lever half beam of steam engines. Patented Oct. 23, 1849..

To Alexander Beckers, of New York, N. Y., for improvement in Blocks for holding Dagurreotype Plates. Patented Oct. 23, 1849.

To Augustus Faulkner, of Walpole, N. H., for improvements in Looms. Patented Oct. 23, 1849.

To John Karney, of Cincinnati, Ohio. for improvement in Invalid Bedsteads. Patented Oct. 23, 1849.

To John Ericsson, of New York, N. Y., and R. B. Forbes, of Boston, Mass., for improvement in apparatus for distilling Sea Water. Patented Oct. 23, 1849.

To James D. Sparkinan, of Williamsburgh, & Mellville Kelsey, of Brooklyn, N. Y., (Assignees of William Berry, of Bedford, N. Y.,) for improvement in surfacing floor oil cloth. Patented Oct. 23, 1849.

To Elhanan Winchester Scott, of Lowell, Mass., for improved Circular-Saw Set. Patented Oct. 23, 1849.

To Andrew Cathcart, of Madison, Ia., for improvement in Locomotives for ascending inclined planes. Patented Oct. 23, 1849.

To William & William Henry Lewis, of New York, N. Y., for improvement in apparatus for holding Daguerreotype Plates. Patented Oct. 23, 1849.

To Frederick S. Barnard, of Zanesville, Ohio, for self-adjusting valve for regulating the admission of air to Fan Blowers. Patented Oct. 23, 1849.

DESIGNS.

To James Wager, of Troy, N. Y., for Design for Stoves. Patented Oct. 23, 1849.

To Moses Pond, of Boston, Mass., for Design for Air Tight Stoves. Patented Oct. 23, 1849.

To Hosea H. Huntley, of Cincinnati, Ohio, for Design for Stoves. Patented Oct. 23, 1849.

To John F. Rathbone, of Albany, N. Y., for Design for Stoves. Patented Oct. 23, 1849.

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In the List of Patents of Oct. 2, 1849, the residence of Ambrose Torrey was given as Boston, Mass., it should have been Boston, New York.

Apples in France.

In Normandy and Brittany the apples used for cider are in extraordinary abundance. The farmers have been obliged to fix props repeatedly under the branches, to enable them to support the heavy weight of fruit, that bends them to the earth. The cider crop will, in most places, be twice or three times more abundant than in ordinary years.

It is decided to supply Berlin with water, from the Lake of Betts, four miles distant, at an expense of $500,000.

Transactions of the British Scientific Association.—No. 1.

This Association held its nineteenth meeting during the last month, at Birmingham, and we will endeavor to give a condensed abstract of its proceedings.

PHOSPHORUS IN IRON.

Mr. Rinman stated that phosphorus had been discovered in Swedish iron, whenever it presented the peculiarity of what is technically termed "cold short." The process adopted was the following:—the pig iron, weighing about three grammes, and reduced to small pieces, was dissolved in diluted nitric acid, the solution evaporated to dryness, the dry mass heated strongly with free access of air, in order to destroy all carbon. After heating, the dry mass was triturated and mingled with six times its weight of soda, a little chlorate of potass, and a little silica, and smelted as long as any gas was disengaged. The smelted mass was exhausted by boiling water, and digested for some hours. The solution was filtered, the undissolved residue washed with hot water, containing a small quantity of chloride of ammonium. The solution was evaporated to dryness, and the dry mass treated with hydrochloric acid and dissolved in water. After filtration, the solution was neutralized, and the phosphate of lime was precipitated in a closed vessel by a solution of chloride of calcium with ammonia. Dr. Percy spoke of the importance of this inquiry—particularly in such a district as Birmingham. He then instanced many of the peculiarities of the Staffordshire iron, which contain phosphorus; and spoke of the peculiarity of the Berlin iron, which is so singularly fluid in casting, as being probably due to some such combination. Dr. Ronalds, Dr. Miller, and Mr. R. Phillips, confirmed the fact of the general presence of phosphorus in cast iron.

ELECTRIC BATTERIES—USEFUL DISCOVERY IN PLATING.

Mr. W. S. Ward produced a paper on this subject, and stated that a series of calculations, founded on data, produced to the Chemical Section at Swansea, showed the efficient power of three generally useful forms of battery, known as Smee's, Daniell's, and Grove's, would be equal when 100 pairs of Smee's, 55 pairs of Daniell's or 34 pairs of Grove's were used, and that the expense of working such batteries, as regards a standard of 60 grains of zinc in each cell per hour, would be about 6d., 7½d., and 8d., respectively.

This communication led to conversations on the economy of the electric light and electro-magnetic engines, in which Dr. Faraday, Mr. Shaw, Mr. Hunt, Mr. Elkington, and other gentlemen joined. Dr. Faraday remarked on the imperfect character of the electro light, and its inapplicability for purposes of general illumination: all subjects appearing dark when the eye was embarrassed with the intensity of the electric arc. Mr. Shaw and Dr. Percy instanced the magneto-electro machines which are employed at Birmingham for electro-plating, in which the current cost of the motive power—viz., a steam engine to put the magneto-electric machine in action, was the only working cost. Mr. Elkington stated that they had never been induced to abandon the voltaic battery which they employed in their manufactory, finding it more economical than the magneto-electrical machine, of which he was the patentee. He also stated the remarkable fact, that a few drops of the sulphuret of carbon, added to the cyanide of silver, in the decomposing cell, had the property of precipitating the silver perfectly bright, instead of being granulated so dead as it is when thrown down from the solutions ordinarily employed.

This information is of the utmost importance to many of our readers, in this city, Boston, Philadelphia, Baltimore, and other places, who are engaged in the Electro-plating—either lamps, or any other articles in the electrotype line.

CHAIN-PIPES FOR TELEGRAPHS UNDER WATER.

Mr. Whishaw presented some links of a full sized pipe for enclosing the wires of Electric Telegraphs under water. The pipe was formed of links connected together by sockets, each link varying according to circumstances, from 18 inches to 24 inches in length, and from 1 inch to 2½ inches internal diameter, according to the number of wires to be inclosed. These pipes being of wrought iron are exceedingly strong—and are required merely as a protection to the wires, which are previously insulated by means of gutta percha. Pipes of somewhat similar construction are laid under the Rhine and other rivers in Prussia—where the underground system of telegraphs is adopted by the Prussian Government (already to the extent of 1,200 miles)—although many of the railway companies suspend the wires between posts, as practised in England, America, France, &c.

BURSTING OF THE BRAMAH CYLINDER OF THE TUBULAR BRIDGE.

Mr. Robert Stephenson being present, was requested to give some account of the bursting of the cylinder of the hydraulic press, when raising the first tube of the Britannia Bridge at the Menai Straits, and which has stopped the work for some time. He said it was first intended that the tube should be raised six feet, a link then taken off and the space built up. Fortunately this plan was not carried out, and such was the care taken, that as the tube rose, men were stealing in, so to speak, small planks of timber. But for these precautions the fall would have been fatal to the whole structure, for as it was, it fractured bearers of cast iron upwards of 500 tons weight. The tube was never for a moment suspended in air, and he had since taken the additional precaution of packing the space between the cross-heads and the pump with small iron wedges. No accident could now take place. The fracture in the cylinder occurred in what might have been considered the very strongest place. The pressure at the time was no more than 3¼ tons to the square inch, no means unusual pressure. As connected with the cause of the accident, he might state that a short time previously, when the presses on both ends were working simultaneously, it was remarked that the tube had a strange tremulous motion along its whole surface. In a short time it increased, until the vibration assumed the character of a short wave. At every action of the pump the whole mass seemed to acquire a state of pulsation, comparable to nothing but the pulse of a man's arm. The presses were stopped, and since they have only been worked at one end. With respect to the immediate cause of the accident, he might state that the shape of the cylinder-square was not the best, and no doubt the weakness had arisen from unequal cooling. Only one of the presses was at work when the accident occurred. Dr. Robinson, in moving the thanks of the meeting to the President, remarked upon the singular fact of the vibration spoken of by Mr. Stephenson. He (Dr. Robertson) presumed that the motion in the end of the tube being raised, was reflected from the fixed end, and hence the vibration. Mr. Stephenson said that the fact of his having allowed the damaged cylinder to be used after he knew it was faulty, had been strongly commented upon. In answer to that accusation of indiscretion, he begged to state that the fault lay in the collar of the casting, where no pressure came. Mr. Roberts remarked that the way to obviate vibration was to work the engines at unequal speed. He considered that the shape of the casting was bad, and the mode of casting also not the best. It would greatly improve the strength of such work if spiral casting were to be adopted; that is, to pass the metal into the mould in a spiral direction. Mr. Webster considered the pulsation spoken of might have had some influence in causing the fracture. There might be a conspiration of vibration in the tube and the press, which would destroy the cohesion in the particles of the metal, and cause the fracture. After a few other conversational remarks from Mr. Eaton Hodgkinson, and others, the subject was dropped.

Washington Monument.

A calculation made by William Darby, Esq., the Geographer, goes to show that if the National Monument at Washington be elevated to five hundred feet, its apex will be visible at a distance of twenty-seven and a half miles. He asserts that on the same mathematical principles a height of six hundred feet gives a horizontal radius of a vision to about thirty miles.

Self Reliance.

It must be confessed that the young men of the present generation have too little reliance upon their own powers, and look for success in life as the result of aid from others. We know it is hard to pass through the world alone, with no one to guide, counsel and assist us, but even that is better than to sit idly down, with a repining spirit, and wait for some one to bring into reality the airy castles which fill our imaginations. We should be up and doing, and not set our hopes beyond the reach of ordinary exertions. We should remember that but few attain high honors, and remember too, that those most able to assist others in their progress, are themselves generally in great need of those feelings and sentiments which will alone cause station or wealth to bring happiness. There are but few after all better off than others, and the various grades of society do not cause so much actual as apparent difference in the happiness of the world. It is incompatible with the ideas of a just Providence to suppose that the majority of the human race are unhappy, and yet by far the largest portion are continually looking forward to some change of position, which shall create an increased value in life. We have considered the subject long, and believe that if a young man throws aside all hope of any pushing forward from others, and enters upon the real conflict with the world, in the full determination to be the maker of his own fortune, that his chances for enjoying life are materially increased. We should never, however, rest contented when our own wants are supplied, but consider that a care for the wants and feelings of others, is far different from the usual cringing dependence upon those more fortunate in worldly matters than ourselves. Mankind cannot progress without every man is willing to aid his fellow, and contentment will never reign upon earth till he is ready to rest contented with a position which his own energies can give him. Let us, while assisting the steps of others, march bravely on wherever the course of human events may lead us; we shall find that wherever we go, the same Providence will still watch over us, that the same world is about us, and that the great end of our exertions, happiness, is still within our grasp, if we will only reach forth and seize it.—[Western World.

The Rumbling Spring in Alabama.

MESSRS. EDITORS:—I send you a short description of the Rumbling Spring near this place, which will no doubt be interesting to many who are fond of hearing about the natural wonders that exist in our country. The spring lies about three-quarters of a mile from my land, and exactly 75 miles due north from Mobile, and six and a half miles east of Coffeeville, near the meridian line. The water is impregnated with the carbonate of lime, and it flows out, affording water enough to run a saw and grist mills, if the banks were high enough. I have seen the water in the spring boil up as large as the head of a flour barrel, when the back water from the Satilpa Creek was once six feet deep over the spring. Before bad weather, the rumbling sound is much louder, and the trembling of the earth more perceptible, and the water boils straight up, but the sound appears to come from a westerly direction. I have a nephew, a stout boy, who went there to get water, and by accident fell in. The water boiled up with such force that it threw him out on the bank, when, in attempting to rise he fell in again, was thrown on the bank—and thus for three times at least, when he was found on the bank senseless, but soon recovered. In the spring of the year, a great number of beautiful trout may be seen playing in it, as the water is clear as crystal.

M. C.

Coffeeville, Ala.

How to Make a Good Cup of Tea.

M. Soyer recommends that, before pouring in any water, the teapot, with the tea in it, shall be placed in the oven till hot, or heated by means of a spirit lamp, or in front of the fire (not too close, of course) and the pot then filled with boiling water. The result, he says, will be, in about a minute, a most delicious cup of tea, much superior to that drawn in the ordinary way.

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TO CORRESPONDENTS.

"C. G. of Ala."—Vols. 3 & 4 cannot be sent by mail. In answer to your enquiries respecting rotary engines, we would refer you to a copy of our paper sent this day. No enquire of that kind has ever been introduced to any extent. $15, received, back numbers sent to each subscriber.

"J. E. of S. C."—We shall endeavor to furnish a series of articles upon tanning during the publication of this Vol. No work upon the subject can be furnished. Such a lathe as you want can be purchased of A. K. Carter of Newark, N.J. (Blanchard's Patent.) Saws of all kinds can be purchased of R. Hoe & Co. of this city.

"C. F T. of Ky."—Wheeler's Patent Endless Chain, or Railway power, is considered as good as any, one horse $75, two horse $100.

Two numbers of Ranlett's Architect, have been sent by mail. Nelson E. Chaffee of Ellington, Conn., is the patentee of an improved apparatus for drying wool or cotton.

"J. C. of Phila."—We have examined the drawings of your hydrants. It is almost impossible to tell after so much has been done in hydraulic's, whether your apparatus is new or not. There seems to be some novelty in the combination, but we are not prepared to say whether there is sufficiant to warrant an application for letters paient. To be candid we should not think you would ever be properly remunerated for the time and expense of applying. Under these circumstances a patent is worth nothing. If you feel satisfied of its utility you had better construct a model, and send to us for examination.

"G. W. D. of N. Y."—Numbers 27, 28, 32, 34, 35 & 36, could not be furnished, as we have none of them on hand.

"B. B. B. of Wis. '—We cannot send you the last half of Vol. 4, complete, we lack 8 numbers. The $1, has been placed to your credit.

"W. S. H. of N. Y."—We know of two edition of English works devoted to Cabinet making but they are too ancient for your use.

Dr. J. H. of Ala."—Geo. Page of Baltimore is the patentee and manufacturer of the windmill referred to in yours of the 21st ult.

"H.I. of N. Y."—The first 43 numbers of vol. 4, cannot be furnished complete, we are short some 7 numbers.

"Mrs. L. D. of N. Y."—Your business will meet further attention from us, as soon as possible.

"G. Poe of Md."—We have forwarded you a copy of our journal containing a description of the Camera. We published a series of illustrated articles upon drawing and sketching in Vol. 2, We are glad to hear that you like the "Sci. Am." You could participate in the advantages of a club.

"Z. S. D. of New Bedford."—Nos. 1 & 20 cannot be supplied, otherwise we should like your numbers.

"J. C. of Boston."—We know nothing of the information you ask for. All the parties are unknown to us.

"C. M. M. of Pa."—The wheels referred to are not used for tide mills. We have sent the numbers you ordered.

"E. F. of N. Y."—There is nothing patentable in your method of constructing a fence.—The same principle was applied for some 18 months since, without success. You had better abandon the idea of making an application.

"F. A. S. of Wis."—We shipped your horse power and thresher last week by the Troy and Ohio line, Care of Messrs, Keene & Osborn, Dartford, Wis.—via Milwaulkie, the bills of lading were sent to K. & O.

"C. W. of N. Y."—The post office directory will not be published until next winter, some time after the convening of Congress. Thomas Cowperthwait & Co. of Philadelphia, published the last one in 1846.

"P. S. W. of N. C."—We cannot give you the desired information in relation to the "Bommer Manure." We are of the opinion however that it was secured by letters patent about 1843—not positive.

"G. T. H. of Va.—We published an engraving of a stump puller, similar to yours in Vol. 4, page 244, "Sci. Am."

"J. D. of Va. and G. W. K. of N. H."—We filled your orders for Ranlett's Architect, and sent them by mail. See notice of Page's window fastener in this No.

"C. P. S. W."—We do not think so common a device as you represent, could have been secured by letters patent. The person referred to may have been one of the many travelling agents whose business is to enlighten the public. The numbers you ask for cannot be supplied.

"G. D., of N. Y."—Such information as you ask for cannot be obtained from this office, as we have no means of getting it.

"Dr. S. H. S., of Cincinnati."—Your model has been received, and we are now awaiting instructions from you. We paid $2 expense upon the model which has been charged to your ac't.

"L. A. F., of Ind."—We shall forward the numbers of Ranlett's Architect as soon as No. 2 is issued from the press, which will be in a few days. We would say to our friends that this celebrated work is now complete in 20 numbers and without doubt excels anything of the kind in the world. We are prepared to furnish them elegantly bound for $6 per vol., or at 50 cents. per number, orders will meet prompt attention.

"C. A. R., of Va."—Your inquiries will meet attention from us as soon as the information can be obtained.

"E. C. G."—We shall examine your plan, and give it notice if it proves useful.

"D. G. S., of Pa."—Your "substitute" is not new. The same plan has been submitted to us three times within the past year. Henry Pennock patented this principle in 1820, and as late as 1843, Mr. Bowdler re-invented and attempted a patent in England but failed. The plan has been tried but does not work well except on small engines. If we had time we could point out the defects in all such contrivances. We presume however the above will satisfy.

"J. Van D., of Miss."—Such an instrument as you refer to cannot be obtained here, to our knowledge. The back numbers of Vol. 4 wanted cannot be furnished, as they are all gone, except a few odd sets.

"O. C., of Ill."—We should like very much to hear from you. The amount of Mr. P.'s bill for reparing your model has been paid, and we should like the money you withdrew from us again refunded.

"O. W., of N. Y."—The specification and one drawing of your invention was forwarded you by express on the 30th. Examine the papers thoroughly and, if right, execute them and send them back as soon as possible.

"J. E. A., of Boston."—Why do we not hear from you ?

"C. D., of N. J."—The examiners at the Patent Office inform us through the Commissioner, that your invention has passed their examination and found not to possess sufficient novelty for the grant of letters patent. If you recollect the opinion we expressed in the matter, previous to the application being made, you will notice the decision of the examiners coincides precisely with our opinion, as expressed at the time we made an examination for you.

"J. C., of S. C."—You are freely allowed to reply, but do not make the articles long.

"S. M. E., of N. Y."—We are much obliged to you for the report; we will say a word about it in due season.

"A. B., of Va."—Accept our thanks for your great kindness.

T. N. F., of Mass.; J. V. S., of Ohio ; C.A. J., of R. I.; O. J. R., of N. Y.; C. S. W., of Ky.; C. F. T., of Ky., and J. D. B., of S. C. —your orders for Ranlett's Architect have been filled and sent by mail.

We had several letters on hand at the time of going to press, which should have been answered this week ; our friends must excuse the delay, as we are compelled to work night and day, in order to keep our business matters up to the mark.

Money received on account of Patent Office business, since Oct. 24, 1849 :—

O. L. R., of N. H, $30 ; C. F. S., of Pa., $15; N. P. J., of Mass., $45 ; C. N. T., of Fla., $10 ; G. F. N., of Texas, $20; F. S. T., of San Francisco, $100 in California gold.

ADVERTISEMENTS.

Patent Office.

128 FULTON ST.

NOTICE TO INVENTORS.—Inventors and others requiring protection by United States Letters Patent, are informed that all business relating to the procurstion of letters patent, or filing caveats, is transacted at the Scientific American Office, with the utmost economy and despatch. Drawings of all kinds executed on the most reasonable terms Messrs. Munn & Co. can be consulted at all times in regard to Patent business, at their office, and such advice rendered as will enable inventors to adopt the safest means for securing their rights.
MUNN & CO.,
128 Fulton street, New York.

PATENT HOISTING MACHINE FOR SALE.—The right to manufacture, sell, and use in the State of New York, Geo. E. Warner's patent apparatus for hoisting bricks, mortar, etc., upon buildings while erecting. Letters Patent were granted on the above invention the 5th of last June, and a description published in the Scientific American page 292 Vol., 4. The right of the State of New York will be sold cheap. Address N. & C., care of Munn & Co., this office 6

TELESCOPE FOR SALE.—A fine five and a half feet reflector, with five inch aperture, Herschelian and Newtonian construction combined, with equatorial movement, for sale by
2*7 E. D. HISCOX.

STEAM ENGINE FOR SALE.—A Steam Engine of 80 horse power, with two return flue boilers, all complete. The Engine was made by Hogg & Delamater, of this city, and has been run less than one year—cost $6000 and will be sold for $3000—the manufacturing company that used it having failed.
Application must be post paid, to
SAMUEL C. HILLS,
Machinery Agent, 43 Fulton street,
Who has constantly for sale, Engines, Lathes, Planers, etc. etc. 6 4

HOLDEN'S DOLLAR MAGAZINE. The present proprietor of this popular Magazine in continuing its publication, is determined that it shall lose none of its merits and attractions which it possessed under its former one, and which has made it so desirable a Periodical for Family Reading. It is made up of Tales, Translations, Essays, Biography, Poetry, Sketches of History, Sentiment and Humour, Reviews, Criticisms and Topics of the month, by writers of the lughest order of talent and its literary merits are unsurpassed. It is furnished at the low price of One Dollar a-year, in advance, the yearly volume containing 768 pages, making it the best and cheapest Dollar Magazine published. Five copies will be furnished for $4, and twenty copies for $15. Letters must be addressed, HOLDEN'S DOLLAR MAGAZINE, No. 109 Nassau Street, New York, (post-paid). Money may be sent at the risk of the proprietor, provided a description of the bills are kept, and mailed in the presence of the postmaster as evidence of the fact.
W. H. DIETZ, No. 109, Nassau St.,
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To Prevent the Oxidation of Iron.

One method consists in the addition of pig iron, when in a state of fusion, of from 2 to 10 per cent. of copper, tin, nickel, or antimony, by which addition, the iron is rendered more malleable and less subject to oxidation. A second method consists in the giving to the iron a coating of steel, or rather a species of iron containing less carbon and of course approaching to steel. This is effected by the addition of one part of blister steel to four parts of molten cast iron, and then adding scrap iron to the mass, until an iron rod is no longer rendered brittle by being dipped in the mixture. With this compound, common iron is coated in the same manner as pursued in the case of covering iron with brass; but various methods are pursued, according to the size and nature of the article to be coated; where it is at the end of a bar of iron, such as an axle, and is to be of a particular form, this form may be given to the crucible, thereby making it a mould, and when in a state of perfect fusion, the iron, either previously heated or cold, is to be immersed in the melted mass, and when it is perceived that the mass is perfectly fluid, than the fire may be withdrawn, or the crucible be allowed to cool by any available means; but when the iron to be coated, is immersed cold, the melted mass is immediately congealed, but it must be permitted to remain in the crucible till it again becomes fluid, and then it should be allowed to cool. If the whole is allowed to cool slowly, it is then soft, and may be turned in the lathe, and afterwards hardened by heating it and cooling it suddenly in the usual manner; but in this case care must be taken, as the coating and the iron have different powers of contracting. If the coated parts were suddenly immersed in water, it would certainly crack, the uncoated part must therefore be immersed up to the coated part, when the conducting power of the iron will cool the coating sufficiently quick to ensure a proper hardness.

A third method of preventing oxidation, is by case-hardening the metal, by the use of the ferrocyanide of sodium, calcium or barium.

In order to apply the ferrocyanide, an alkaline bath, formed with carbonate of soda, or other alkali is used. This bath may be a crucible or large basin built in the brickwork of the furnace, which should be a reverberatory furnace, and previous to being used, should be raised to a white heat; the iron to be case-hardened requires to be previously heated to nearly a red-heat, and then immersed in the bath, and there raised to a heat sufficiently high, after which it must be immediately immersed in the ferro-cyanide previously fused in another vessel; but if the quantity of iron to be case-hardened is small, it would not be advisable to fuse the ferro-cyanide (as it is very soon decomposed,) but immediately on taking it out of the bath it must be sprinkled with the ferro-cyanide; should ferro-cyanide of potassium be used, it is found that the alkaline bath prevents effectively the corroding of the iron.

A fourth scheme consists of a method of coating copper, or the alloys of copper or iron, with platinum. Platinum is dissolved in aqua regiæ, and the iridium which remains undissolved as a black powder, separated by filtration, then evaporated to dryness, and when cold a quantity of caustic potass, equal in weight to the metallic platinum employed is to be dissolved in water, and poured on the chloride of platinum. This will precipitate the platinum of an impure yellow color; a quantity of solution of oxalic acid equal to the weight of the metalic platinum, is now to be added without pouring off the solution which remains on the precipitate; the solution is then to be boiled till the precipitate is entirely dissolved, a small quantity of iridium will still remain, which, together with any other impurities, must be separated by filtration; caustic potass equal to twice the weight of the metallic platinum is to be dissolved in water and added to the above. The solution is now ready for platinising the copper or iron article which is to be coated with platinum. The article to be coated is to be put in a vessel of glass, or earthenware, and the above solution is to be poured in, sufficient to cover it. It is then to be connected with the positive pole of a Daniel's or Bunsen's battery of one or more pairs of plates, according to the size of the article to be coated, and a piece of platinum foil in connection with the negative pole is to be immersed in the solution. The deposition of the platinum in a metallic state, on the surface of the metal article, immediately commences, and is to be continued till the required thickness is obtained. All these plans may be very well, but for common purposes they must render the iron far too expensive.

Hollow Iron Moulding.

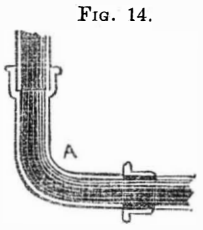
[Continued from page 48.]

Fig. 13.

Fig. 12.

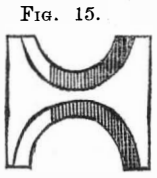
In the moulding of the various lengths of pipe that are required for use, one pattern is made to answer. Pipe patterns are generally made nine feet long, of which an appropriate number of lengths are cast, when more than nine feet of piping is required. But shorter lengths also are frequently wanted, when of course the full length of the pattern would not be proper. The moulding, therefore, is cut to the required length; in technical language, the pattern is cut in the sand. In such a case, some preparation is necessary to form a new bearing for the core. For this purpose, two semi-circular pieces of wood, of the diameters of the mould and the core respectively, are sprigged together, end to end, as in fig. 12; and it is obvious that by placing the larger piece in the mould in each box, at corresponding parts, and ramming fresh sand about the smaller, the bearing will be formed. In like manner, if the piece of pipe terminate in a flange, the flange having been moulded in its place, a half flange of the same dimensions, with a half core-print on it, as at fig. 13, is set into the mould, and the bearings for the core made up. Small perpendicular branches required to be made upon pipes, are cast, either horizontally or vertically, as may best suit the form of the box. In the latter case, the branch pattern is set loose upon the pipe, projecting upwards between the ribs of the box, and having been moulded, it is drawn out, and its core set in upon the pipe core, and the whole covered in.

Fig. 14.



Besides straight pipes, others have often to be cast of different forms, requiring peculiar treatment. In arrangements of pipe works there is usually a number of knees or bends in their construction. These bends are usually cast separate from the straight portions of pipe, having facets upon them by which they may be afterwards joined to the pipes. The annexed, fig. 14, is a longitudinal section of a square knee in a line of pipes, showing the method of junction by spigot and facet. The term spigot, it may be as well to observe, is applied to the small semi-circular ring upon the plain end of a pipe, (as may be seen in fig. 5;) facet denotes the cup mouth on the other end for receiving the spigot. There are usually patterns and core-boxes for pipe bends of the usual square-knee shape in which they are moulded in green sand. In the absence of patterns, however, for these and for other varieties of short piping, they are *swept up* in loam, the core within the "thickness."

Fig. 15.

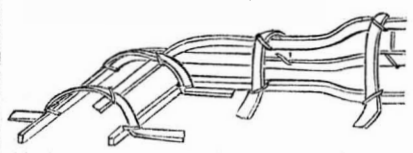


In this process, the first point is to have a level iron plate set, upon which the work is to be done. Like patterns, the loam work is formed in two halves. The cores are executed in the first place, and when dried, the thickness forming the exterior of the casting are not laid on. Fig. 15 represents the guage usually employed in forming small pipe work. As already said, the work is done in separate halves, for which purpose semi-circular cuts are made in the guage, of which one is smaller than the other, being respectively the measures of the core, and of the additional thickness.

For example, suppose the bend, figured at sketch 14, is to be constructed, a small square rod of iron is bent to the form of the knee, against and along the side of which the guage is moved. A quantity of loam being laid on the plate in the line of the pipe to be formed, the guage in its progress fashioning the loam to its own form. When the two half cores are in this manner swept up, they are well dried and blackwashed, after which the guage is inverted, and additional loam being laid on for thickness, it is likewise shaped to the form of the pipe. The junction of the body of the pipe and the facet, which are of different diameters and of course require different sweeps, is scraped out by a file when the loam is dried; the head on the end of the facet is either formed by a pattern applied to the moulding. or cut out of the *cope*.

The loam pattern being thus completed in two halves, dried and blackened, it is bound together at two or three places by iron wire,

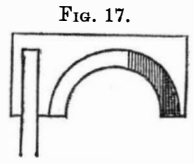
Fig. 16.



and bedded half into a sufficient quantity of old loam mixed with water and laid over the iron plate. The boundary of the loam is built up with fragments of cake loam. The bed being smoothed off on each side and dried, a layer of the same watered loam is applied to cover in the upper half of the pattern. As this upper layer has afterwards to be lifted whole, it requires to be strengthened by the addition of irons. With this view, pieces of rod iron, accommodatad to the form of the moulding, are laid on among the wet loam tranversely and longitudinally, and bound together by wires at the angles, constituting a kind of skeleton frame-work, fig. 16, for the cope, as it is termed, or upper structure. The irons are then covered in with old loam, which is smoothed over them, and the whole is for the last time thoroughly dried.

The building of the work being now completed, the next step is to undo it to clear out the thickness. The cope is lifted off carefully, leaving the rest of the work behind it, and this complete separation of the parts is one object for which the blackened or charcoal water is applied. In the same way the pattern is lifted out from the bed of the moulding.

Fig. 17.



The thickness is easily broken off the core, leaving the latter entire; the halves of which are next bound by wire, and replaced in the mould, stayed by bearings at the ends, and by steeples intermediately. The cope is replaced, guided to its former situation by intentional irregularities on the junction surface, and is bound by wires laying hold of the skeleton, to the under plate.

The gate is formed in the usual manner by a pin stuck in the cope while being formed.

For some small pipes, such as bends which are uniformly circular, circular iron-plates are frequently made to the same centre on both sides, so that when the cores are swept up on them, they lie concentric with each other. The edges of the plate will therefore serve for guides in the making of the core. For this purpose the guages are made as in figure 17, having a piece of wood nailed on and projecting downwards. By sliding this gauge along the interior or exterior edge, as it may be adapted for them, the pipe is formed as before.

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